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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,524	11/12/2003	Steven Mark Anderson	6-17-18-166-3	9308

7590

11/22/2005

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EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/713,524

Applicant(s)

ANDERSON ET AL.

Examiner

Jeffrie R. Lund

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 19-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The newly added limitation "low temperature" is not defined in the specification in such a manner as to enable one skilled in the art to make and use the invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 19-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "low temperature" in claim 19 is a relative term which renders the claim indefinite. The term "low temperature" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

5. The Examiner has interpreted the term "low temperature" as referring to the

Art Unit: 1763

power supplied to the coils as found on page 9 lines 15-21 (paragraph 0034) of the specification, and has assumed that power levels lower than those disclosed would be considered "low temperature" plasma.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 19-21 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lamont et al, US Patent 4,756,810.

Lamont et al teaches a sputtering apparatus that includes: an actively cooled pedestal 24 for holding a semiconductor wafer 58; an low temperature ionized plasma generating tool 40 (less than 1.5 w/cm²); and a target (source) of material 38. The active cooling comprises flowing a cooling medium through cooling coils 22 and maintains the temperature of the wafer at about 150°C, which is below the tensile to compressive stress transition temperature. (Entire document) The temperature of the plasma is an intended use of the apparatus, and the apparatus of Lamont et al can create a plasma with the specific temperature. It has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re*

Art Unit: 1763

Danley, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114. The specific wafer treated in the apparatus is an intended use of the apparatus. The apparatus of Lamont et al can inherently hold any wafer with vias adjacent to an interconnect made from aluminum, aluminum alloys, copper, or copper alloys. It has been held that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Alternately, it would be obvious to optimize the temperature of the plasma, and use the sputtering apparatus of Lamont et al to support a wafer having vias adjacent to an interconnect made from aluminum, aluminum alloys, copper, or copper alloys (which are known in the art, see page 2 and figure 1 of the specification) on the actively cooled wafer support 24 and to deposit a material.

8. Claims 19-21 rejected under 35 U.S.C. 102(b) as anticipated by or, in the

Art Unit: 1763

alternative, under 35 U.S.C. 103(a) as obvious over Wolters, US Patent 5,266,524.

Wolters teaches a sputtering apparatus that includes: an actively cooled pedestal 21 for holding a semiconductor wafer 2; an low temperature ionized plasma generating tool 23, 24, 26 (200watts); and a target (source) of material 22. The active cooling comprises flowing a cooling medium (liquid N₂) through cooling passage 35 and maintains the temperature of the wafer at about 80 to 150°K (-193 to -123 °C), which is below the tensile to compressive stress transition temperature. (Entire document, specifically figure 5 and column 4 lines 49-57) The temperature of the plasma is an intended use of the apparatus, and the apparatus of Wolters can create a plasma with the specific temperature. It has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114. The specific wafer treated in the apparatus is an intended use of the apparatus. The apparatus of Wolters can inherently hold any wafer with vias adjacent to an interconnect made from aluminum, aluminum alloys, copper, or copper alloys. It has been held that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in

Art Unit: 1763

determining patentability of the apparatus claim." Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." In re Young, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 136 USPQ 458, 459 (CCPA 1963).

Alternately, it would be obvious to optimize the temperature of the plasma, and use the sputtering apparatus of Wolters to support a wafer having vias adjacent to an interconnect made from aluminum, aluminum alloys, copper, or copper alloys (which are known in the art, see page 2 and figure 1 of the specification) on the actively cooled wafer support 24 and to deposit a material.

9. Claims 19-21 rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Drewery et al, US Patent 6,287,435 B1.

Drewery et al teaches a sputtering apparatus that includes: an actively cooled pedestal 97 for holding a semiconductor wafer; an low temperature ionized plasma generating tool 450 (1000-5000 watts); and a target (source) of material 420. The active cooling comprises flowing a cooling medium through cooling loop of the support and maintains the temperature of the wafer at about -50°C, which is below the tensile to compressive stress transition temperature. (Entire document) The temperature of the plasma is an intended use of the apparatus, and the apparatus of Drewery et al can create a plasma with the specific temperature. It has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover

Art Unit: 1763

what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114. The specific wafer treated in the apparatus is an intended use of the apparatus. The apparatus of Drewery et al can inherently hold any wafer with vias adjacent to an interconnect made from aluminum, aluminum alloys, copper, or copper alloys. It has been held that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Alternately, it would be obvious to optimize the temperature of the plasma, and use the sputtering apparatus of Drewery et al to support a wafer having vias adjacent to an interconnect made from aluminum, aluminum alloys, copper, or copper alloys (which are known in the art, see page 2 and figure 1 of the specification) on the actively cooled wafer support 24 and to deposit a material.

Response to Arguments

10. Applicant's arguments filed September 20, 2005 have been fully considered but

Art Unit: 1763

they are not persuasive. In regard to the argument that Lamont, Wolters, and Drewery et al do not teach a low temperature plasma tool, the Examiner disagrees. First, as discussed above, it is not clear what a "low temperature plasma tool" is. Second, the power supplied to the plasma i.e. the temperature of the plasma, is an intended use of the apparatus and the apparatus of Lamont, Wolters, and Drewery et al can be controlled to supply a low temperature plasma. Finally, Lamont, Wolters, and Drewery et al all appear to teach power levels similar to the disclose embodiment.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

Art Unit: 1763

supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrie R. Lund
Primary Examiner
Art Unit 1763

JRL
11/17/05